

REMARKS

The Applicant thanks the Examiner for indicating that Claims 29, 30 and 39 and 40 would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. Claim 29 has been rewritten in the accompanying amendment as a new independent method Claim 41 including all the limitations of Claims 21, 25 and 28, and Claim 39 has been rewritten as a new independent apparatus Claim 42 including all the limitations of Claims 31, 35 and 38. Also, claims 30 and 40 have been amended to be directly dependent on Claims 41 and 42 respectively, and a grammatical error in Claim 30 has been corrected. It is submitted accordingly that each of Claims 30, 40, 41 and 42 is allowable.

The Examiner has rejected claims 21, 22, 23, 25, 26, 31 32, 33, 35 and 36 under 35 USC § 103(a) as unpatentable over US Patent No 4,015,235 of Demaine et al in view of US Patent No 3,729,262 of Snead et al.

Claims 24, 27, 34 and 35 are also rejected under 35 USC § 103(a) as unpatentable over Demaine et al in view of Snead et al and further in view of US Patent No 5,291,195 of Goss, whereas Claims 28 and 38 are rejected under 35 USC § 103(a) in view of Demaine et al as modified by Snead et al and further in view of US Patent No 4,733,833 of Shepherd. The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the above amendments and the following remarks.

Each of Claims 22-28 is directly or indirectly dependent on Claim 21, and the Examiner recognizes in the remarks concerning Claim 21 that Demaine et al do not disclose the feature of “the light sources being energized selectively by row to emit light that defines a horizontal datum in the array”. This is a distinct feature of Claim 21, with the “light sources” referred to in the quotation being the light sources of the specified “vertical array of a multiplicity of horizontal rows of light sources”. There is no “vertical array of a multiplicity of horizontal rows of light sources” disclosed by Demaine et al.

In relating the Demaine et al teaching to Claim 21, the Examiner remarks that “The bottom part of the target is divided into two illuminated sections, respectively green and red, divided by a white vertical line.” and that “The top part of the target is divided from the bottom part of the target with a horizontal white line and the top half is illuminated above that white line in blue light”. These remarks are related to the “further embodiment” described by Demaine et al at lines 45-68, column 5. Successive views seen by the pilot of an aircraft in using that system to bring an aircraft to its parking or docking facility, are shown in Figure 7 of the citation.

From the views illustrated in Figure 7 and the earlier teaching of the citation it is clear that a “vertical array of a multiplicity of horizontal rows of light sources” as required by Claim 21, is not present in the cited system, and that there is (as confirmed by the Examiner) no selective energization by row of the light sources to emit light that defines a horizontal datum in the array.

The Demaine et al citation indicates that their green, red and blue areas and the vertical and horizontal lines seen in the various aspects of the display illustrated by Figure 7, are produced (lines 47-49, column 5) by subdivision of the target graticule target 2 that is used in the beacon illustrated in Figure 3 (described at lines 35-64, column 4) to produce the display aspects of Figure 4. This graticule is illuminated from the rear by a single light source 7, so it is clear that there is no array of a multiplicity of horizontal rows of light sources in the Demaine et al system; there is only one light source. More especially, the essence of the Demaine et al teaching is that light is emitted throughout the whole of the target graticule by the single source, to ensure that appropriate guidance is given from the different colours seen.

The Examiner states that the “fixed reference mark” completely obscures the “white stripes on the target” when the aircraft is correctly docked. From this the Examiner goes on to assert that “the Demaine reference energizes the light sources to define a horizontal datum, even though the reference itself is not illuminated”. It is submitted that there is no foundation for this assertion since, as indicated above, there is only one light source in the Demaine et al beacon, and energization of it is not related to other parts of the optical system.

The Examiner cites the Snead et al disclosure to support the contention that it would have been obvious to one of ordinary skill in the art “to arrange and adjust the lenses and light source to selectively create a datum in the display so as to illuminate the device for better visibility”. The Snead et al teaching features lenses and light sources, but it is submitted teaches nothing concerning or having any obvious relevance to the provision of the “vertical array of a multiplicity of horizontal rows of light sources” which is required by Claim 21 and which is lacking from the Demaine et al teaching. Indeed, Snead et al teach nothing relevant to the feature which is admitted by the Examiner as missing from the Demaine et al teaching, namely, “energization by row of the light sources to emit light that defines a horizontal datum in the array”.

Furthermore, the creation of “a vertical datum in a fixed display” emphasised by the Examiner as taught by Snead et al has no obvious relevance to the method specified in Claim 21, where it is the provision of a horizontal datum by selective energisation by row of a vertical array of a multiplicity of horizontal rows of light sources that is specified. Neither Snead et al nor Demaine et al disclose use of a vertical array of this nature. More especially, the vertical datum 20 facilitated by Snead et al, is not defined by any array of light sources that are selectively energised, but rather by a single lamp 36 located behind a slot 44 in a ground-glass insert 42 (the vertical centre-line bar 18 is separately, but similarly produced by a single lamp 38 behind another slot 44 in another insert 42); see line 56, column 4 to line 16, column 5.

Accordingly, if it would have been obvious to adopt any of the teaching of Snead et al in the Demaine et al system (it is not admitted that it would have been), adoption of that teaching concerned with the use of a single lamp to define a vertical (or any other) datum would not have resulted in a method as specified in Claim 21, in which:

... a horizontal indicator fixed relative to the docking station is viewed along an inclined line of sight from the vehicle against the background of a vertical array of a multiplicity of horizontal rows of light sources spaced at a distance behind the horizontal indicator, the light sources being energised selectively by row to emit light that defines a horizontal datum in the array, ...

In all the circumstances therefore, it is submitted that the method of Claim 21, and of each of Claims 22-28 dependent directly or indirectly thereon, is patentable over the cited Demaine et al in view of Snead et al.

It is pointed out furthermore, that the teaching of Snead et al in the provision of the single light source of lamp 36 (or 38) behind a slot 44 in an insert 42 seems no different in principle from the teaching of Demaine et al of a single light source 7 behind a graticule target 2. Thus it is not clear that there would have been any incentive to utilise the teaching of Snead et al to further the objective of Demaine et al.

In rejecting Claim 22, the Examiner indicates that Demaine et al teach “an array of lights to create a target or background”. It is not clear what “array of lights” the Examiner considers is taught by Demaine et al, but it is clear that the teaching of neither Demaine et al nor Snead includes the provision of the “vertical array of a multiplicity of horizontal rows of light sources” required by the base Claim 21, or the step of “aligning the array to comprise vertical columns and horizontal rows of light sources” of Claim 22.

The Examiner recognizes in rejecting Claim 24 that Demaine et al. do not teach the use of light-emitting diodes as light sources and asserts that such use is obvious in view of the disclosure of Gross. But although Gross might teach the use of light-emitting diodes as light sources, that teaching does not make the provision of a vertical array of light sources aligned in vertical columns and horizontal rows in the system of Demaine et al obvious (whether or not, as argued above, Demaine et al is modified by any of the teaching of Snead et al), nor does it make obvious the energisation of a horizontal row of the array. Replacing the single light sources of Demaine et al and Snead et al, by light-emitting diodes does not change the fundamental optical principle of Demaine et al using a target graticule, or of Snead et al using a slotted insert.

Also, it is to be noted that the light-emitting diodes of Gross are connected to be energized all together, without selection of one of a multiplicity of rows of light sources in an array of columns

and rows. Thus, to apply the teaching of Gross to that of Demaine et al (whether or not modified by any of the teaching of Snead et al) would not result in the method of Claim 22 or Claim 24.

As argued above, Demaine et al and Snead et al lack any teaching relevant to the provision of the “vertical array of a multiplicity of horizontal rows of light sources” required by Claim 21, or “energization by row of the light sources to emit light that defines a horizontal datum in the array”. The disclosure of Shepherd similarly lacks any such teaching. Accordingly Claim 28 which is dependent on Claim 21 through Claim 25, is patentable over Demaine et al as modified by Snead et al in view of Shepherd.

Although the argument advanced above in relation to Demaine et al and Snead et al is related specifically to method Claim 21 and its dependent Claims 22-28, corresponding argument applies to the apparatus Claim 31 and each of its its dependent Claims 32-38. Accordingly, it is submitted that each of Claims 21-28 and 31-38 is patentable over the cited art.

There are very significant advantages both technical and economic in the method and apparatus of the present invention. The method and apparatus of the present invention is capable of performing the function of the multiple beacon assembly of Figure 5 of Demaine et al in regard to different aircraft types. Rather than using separate beacons for the different aircraft types, as taught by Demaine et al, the method and apparatus of the present invention can be readily adapted for any aircraft type, simply by selection of which row of light sources is energised. There are accordingly both technical and economic benefits in the reduction of equipment required. The use of electrical selection of a row or rows to be energized for different aircraft types does not involve any significant cost in equipment or operation, whereas in the system of the citation each different type of aircraft requires an individual beacon to be provided and operated.

Each beacon of the citation requires a high quality optical system that is clearly technically demanding and costly, and requires to be installed accurately in order to give guidance appropriate to pilots of the relevant aircraft type. A major disadvantage of the cited system therefore is that since there are many different aircraft types, the need to provide a separate beacon accurately

located for each type, can readily create conflict on available installation-space at the docking station.

Because the display provided by the method and apparatus of the invention is appropriate (by simple electrical selection) to only one aircraft type at a time, there is significantly less chance of confusion or accident than with the beacon system (Figures 5 and 6) of the citation. The cited system displays directions appropriate to a number of different aircraft and requires the pilot to identify which of the beacons is correct for his aircraft and to avoid being distracted by what is being displayed by the others. The present invention has the advantage that the pilot is not made to choose between displays and there is no other display to distract.

It is submitted that in the light of the above-identified distinctions over the cited prior art and the advantages that result from the present invention, the method and system of each of Claims 21-28 and 31-38, as well as of each of Claims 30, 40, 41 and 42, is patentable over the cited art. If any further amendment to this application is believed necessary to advance prosecution and place this case in allowable form, the Examiner is courteously solicited to contact the undersigned representative of the Applicant to discuss the same.

In view of the above amendments and remarks, it is respectfully submitted that all of the raised obviousness rejections should be withdrawn at this time. If the Examiner disagrees with the Applicant's view concerning the withdrawal of the outstanding rejection(s) or applicability of the Demaine et al., Snead et al., and/or Goss '195 and Shepherd '833 references, the Applicant respectfully requests the Examiner to indicate the specific passage or passages, or the drawing or drawings, which contain the necessary teaching, suggestion and/or disclosure required by case law. As such teaching, suggestion and/or disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his/her expertise in this field, the Applicant respectfully requests the Examiner to enter an affidavit substantiating the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.

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In view of the foregoing, it is respectfully submitted that the raised obviousness rejections should be withdrawn and this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

The Applicant respectfully requests that any outstanding objection(s) or requirement(s), as to the form of this application, be held in abeyance until allowable subject matter is indicated for this case.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,



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